

# KANSAS

## LEGEND

County boundary

★ Capital

• City

1 — Crushed stone/sand and gravel districts

## MINERAL SYMBOLS (Major producing areas)

Cem Cement plant

Clay Common clay

CS Crushed stone

D-L Dimension limestone

D-Sd Dimension sandstone

DS Dimension stone

Ful Fuller's earth

Gyp Gypsum

He Helium

IS Industrial sand

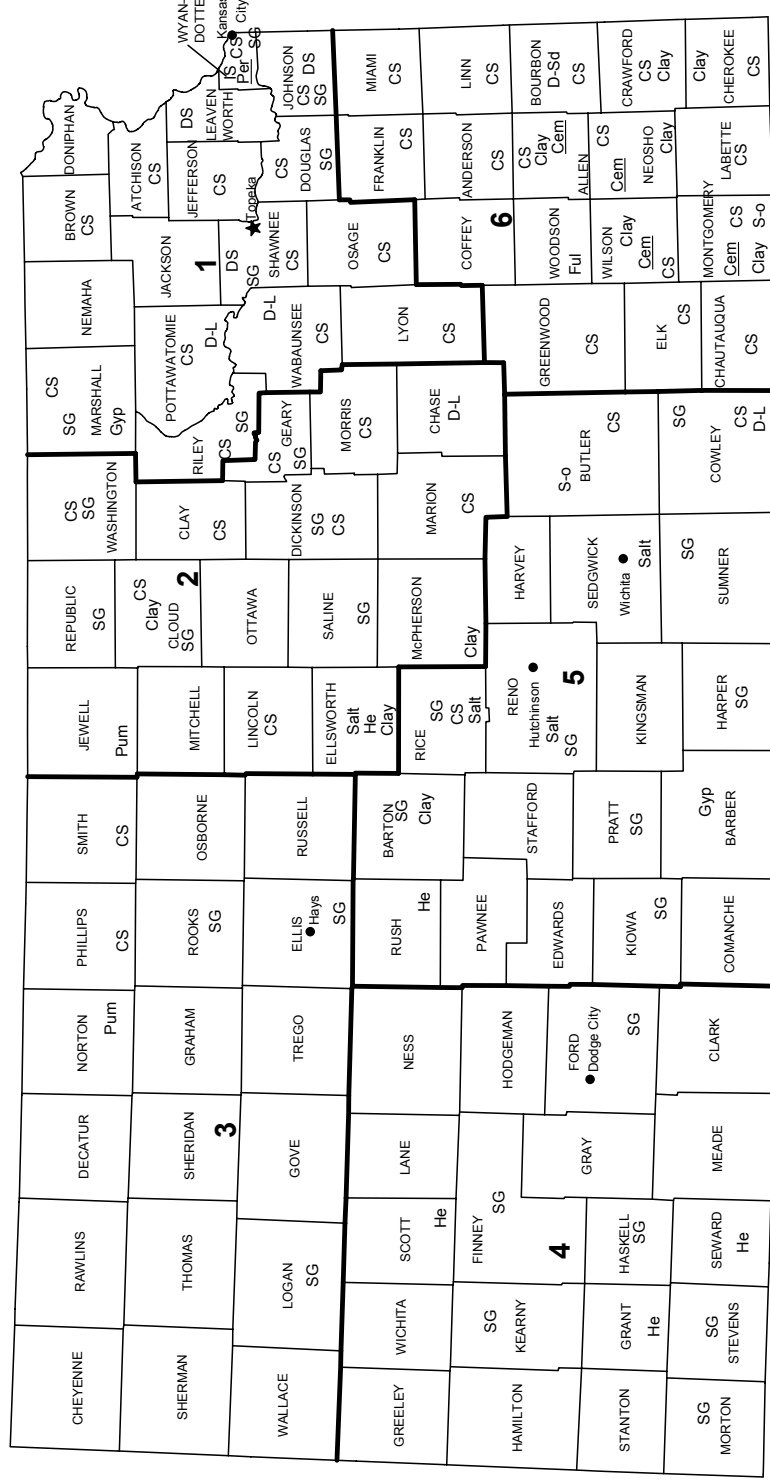
Per Perlite plant

Pum Pumice and pumicite

S-o Sulfur (oil)

Salt Salt

SG Construction sand and gravel



# THE MINERAL INDUSTRY OF KANSAS

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Kansas Geological Survey for collecting information on all nonfuel minerals.**

In 2003, the estimated value<sup>1</sup> of nonfuel mineral production for Kansas was \$688 million, based upon preliminary U.S. Geological Survey (USGS) data. This value was unchanged from that of 2002<sup>2</sup> and followed a 9.4% increase from 2001 to 2002. The State increased to 20th from 21st in rank among the 50 States in total nonfuel mineral production value, of which Kansas accounted for more than 1.5% of the U.S. total.

Portland cement, Grade-A helium, salt, and crushed stone were Kansas' leading nonfuel mineral commodities in 2003, accounting for about 27%, 26%, 18%, and 15%, respectively, and collectively about 86% of the State's total nonfuel mineral production value. In 2003, increases mainly in the production and values of cement (portland and masonry), salt, and construction sand and gravel were balanced out by decreases mostly in those of Grade-A helium and crushed stone (descending order of change), resulting in no overall change in the State's value for the year. In 2002, the most significant increases in production and value were those of portland cement (up by about \$41 million), Grade-A helium (up by \$18 million, with lowered production), crude helium, and industrial sand and gravel; these were offset somewhat by decreases in the production and values of salt (down by \$3 million), crushed stone (down by \$3 million), dimension stone (down by about \$2.9 million, with increased production), gypsum, and fuller's earth (table 1).

Based upon USGS estimates of the quantities produced in 2003 in the 50 States, Kansas continued to be the Nation's leading producer of Grade-A helium and crude helium; it ranked 5th in the production of salt, and 10th in gypsum. Additionally, significant quantities of portland cement, crushed stone, construction sand and gravel, common clays, and dimension stone (descending order of value) were produced in the State. Production of nonfuel minerals in Kansas has consisted entirely of industrial minerals since 1970, following nearly a century (since 1877) of metallic mineral mining in the State. The last zinc and lead mining operation closed in 1970 owing in part to low zinc prices, low-grade ore, and the high operating costs of required pollution control systems.

The following narrative information was provided by the Kansas Geological Survey<sup>3</sup> (KGS).

## Employment

The Kansas Department of Human Resources reported that annual average employment in all aspects of mining during 2003 was 6,515 people, representing essentially no change from 2002 (Labor Management Information Services, 2004<sup>4</sup>). The oil and gas industry employed most of these people, and the remainder were employed in coal and nonmetallic, nonfuel mining operations. The nonfuel industrial-mineral operations employed approximately 1,160 people, with an average salary of \$39,590, which represented a 6.5% decrease in the number of employees and a 13.9% increase in average salary compared to respective values in 2002.

## Commodity Review

Buzzi Unicem SpA, which was based in Italy, purchased Lone Star Industries, Inc. and Heartland Cement Co. Richie Companies purchased a small sand and gravel operation and formed Arc River Sand and Gravel. A railroad facility was built at Arc River Sand and Gravel to allow interstate shipment of aggregate.

## Mine Reclamation

The Kansas Governor's Mined Land Reclamation Award for 2003 went to two companies. Martin Marietta Materials Inc. was honored for land-use conversion to agricultural land and wildlife habitats at its Woodbine Quarry. Bayer Construction Co. Inc. was honored for restoring the characteristics of a tall grass prairie to its Ebert Quarry. Bayer Construction also received a second place National Land Reclamation Award for the same reclamation project.

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<sup>1</sup>The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2003 USGS mineral production data published in this chapter are preliminary estimates as of July 2004 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Values, percentage calculations, and rankings for 2002 may differ from the Minerals Yearbook, Area Reports: Domestic 2002, Volume II, owing to the revision of preliminary 2002 to final 2002 data. Data for 2003 are preliminary and are expected to change; related rankings also may change.

<sup>3</sup>Gregory C. Ohlmacher, an Associate Scientist with the Kansas Geological Survey, authored the text of the State mineral industry information provided by that agency.

<sup>4</sup>A reference that includes a section mark (§) is found in the Internet Reference Cited section.

## Legislation and Government Programs

In 2003, the State legislature passed a law that returned the royalty allocations for extracted minerals to the old method and defined how income should be allocated when royalties are paid to owners. The State law passed in 2001 banning local governments from selling aggregate to the public was tested in a lawsuit brought by two companies against the City of Fort Scott for providing aggregate for private driveways. The Bourbon County, KS, judge ruled that the city could sell a limited amount of aggregate for small jobs in Fort Scott because aggregate for small jobs is not readily available. The two companies were providing aggregate for larger jobs in Fort Scott.

Funding concerns for the 10-year Comprehensive Transportation Program (CTP) for Kansas, approved in 1999, remained high in 2003. Funds designated for transportation projects have been used to offset shortfalls in the State budget. The CTP funding issues were unresolved in 2003, and the Kansas Aggregate Producers Association hoped that the issue would be considered in the 2004 legislative session.

During the 2003 Kansas Field Conference, which was led by the KGS, State legislators visited a dredging operation in Wyandotte County, KS, and a cement plant and underground limestone mine in Sugar Creek, MO. The Holliday Sand and Gravel Co., which owned the dredging operation, allowed the legislators onto the dredge in the Kansas River. The limestone mine, which was operated by Lafarge North America Inc., was unusual because the limestone was mined about 210 meters below the surface of the ground. The field conference guidebook was available from the KGS (Sawin and others, 2003).

Interest in developing coalbed methane remained high in Kansas. Approximately 250 million cubic meters of coalbed methane was produced in 2003.

Geologic mapping continued with Federal matching funding from the STATEMAP program, a component of the USGS National Cooperative Geologic Mapping Program. County geologic maps completed during 2003 included those of Bourbon (KGS M-98), Cherokee (KGS M-104), Hamilton (KGS M-61), and Kearny (KGS M-61) Counties. Digital upgrades of the Wabaunsee and Pottawatomie County maps were nearly complete, and the finished map of Pottawatomie County was due in early 2004. Geologic field mapping continued during the year in Cheyenne, Crawford, Edwards, Ford, Morton, Pawnee, Republic, Saline, Sedgwick, and Washington Counties. Digital mapping efforts and reviews were underway for Barber, Clark, Douglas, Franklin, Gray, Hodgeman, Neosho, and Osborne Counties.

A total of 80 open-file reports (OFR) were filed with the library at the KGS. Detailed mapping of the Hutchinson Salt Member near Hutchinson was published (Nissen and Watney, 2003). Preliminary geologic maps of Crawford, Jefferson, Morton, Pawnee, and Saline Counties were released along with reports on coalbed methane, field mapping, geophysical studies, and groundwater studies.

## References Cited

- Nissen, S.E., and Watney, W.L., 2003, Detailed mapping of the Upper Hutchinson salt and overlying Permian strata beneath Hutchinson: Kansas Geological Survey Open-File Report no. 2003-66, 51p.
- Sawin, R.S., Brosius, L., Buchanan, R.C., and McCauley, J.R., 2003, Kansas Field Conference field guide, June 4-6, 2003: Kansas Geological Survey Open-File Report no. 2003-37.

## Internet Reference Cited

- Labor Management Information Services, Kansas Department of Labor, 2004, 2003 Kansas annual employment and wages report—Topeka, KS, accessed September 16, 2004, at URL <http://laborstats.hr.state.ks.us/industry/aew2003/kansas.htm>.

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN KANSAS<sup>1, 2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2001		2002		2003 <sup>P</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement:						
Masonry	25	2,460 <sup>e</sup>	W	W	W	W
Portland	1,830	140,000 <sup>e</sup>	2,350	181,000 <sup>e</sup>	2,400	185,000 <sup>e</sup>
Clays, common	635	4,280	642	4,280	642	4,280
Gemstones	NA	3	NA	1	NA	1
Helium:						
Crude million cubic meters	36	39,400	W	W	W	W
Grade-A do.	82	163,000	78	181,000	76	176,000
Salt	3,130	122,000	2,630	119,000	2,840	122,000
Sand and gravel, construction	10,200	29,100	9,560	28,700	10,200	31,100
Stone:						
Crushed	22,800	110,000	21,700	107,000	20,600	103,000
Dimension	13	4,780	15	1,900	17	1,870
Combined values of clays (fuller's earth), gypsum (crude), pumice and pumicite, sand and gravel (industrial), and values indicated by symbol W	XX	14,300	XX	64,800	XX	65,700
Total	XX	629,000	XX	688,000	XX	688,000

<sup>e</sup>Estimated. <sup>P</sup>Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data.

XX Not applicable.

<sup>1</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>2</sup>Data are rounded to three significant digits; may not add to totals shown.

TABLE 2  
KANSAS: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

Kind	2001				2002			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	111	21,200	\$104,000	\$4.90	100	20,800	\$104,000	\$5.00
Sandstone and quartzite	3	1,510	6,150	4.06	2	887	3,600	4.06
Total or average	XX	22,800	110,000	4.85	XX	21,700	107,000	4.96

XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

TABLE 3  
KANSAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	W	W	\$4.62
Riprap and jetty stone	49	\$523	10.67
Filter stone	W	W	8.52
Other coarse aggregates	97	755	7.78
Total or average	146	1,280	8.77
Coarse aggregate, graded:			
Concrete aggregate, coarse	192	1,120	5.83
Bituminous aggregate, coarse	W	W	6.03
Bituminous surface-treatment aggregate	34	207	6.09
Railroad ballast	W	W	4.62
Other graded coarse aggregates	961	4,320	4.50
Total or average	1,190	5,650	4.75
Fine aggregate (-3/8 inch):			
Screening, undesignated	161	659	4.09
Other fine aggregates	120	462	3.85
Total or average	281	1,120	3.99
Coarse and fine aggregates:			
Graded road base or subbase	334	1,560	4.68
Unpaved road surfacing	832	3,760	4.52
Crusher run or fill or waste	W	W	5.96
Roofing granules	W	W	4.62
Other coarse and fine aggregates	756	4,110	5.43
Total or average	1,920	9,430	4.90
Other construction materials	7	34	4.86
Agricultural limestone	(2)	(2)	6.83
Chemical and metallurgical, cement manufacture	(2)	(2)	4.83
Unspecified <sup>3</sup>			
Reported	12,300	61,300	5.00
Estimated	3,900	19,000	4.91
Total or average	16,100	80,300	4.98
Grand total or average	21,700	107,000	4.96

W Withheld to avoid disclosing company proprietary data; included with "Other."

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total."

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
KANSAS: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2002, BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1 1/2 inch) <sup>3</sup>	W	W	W	W	--	--
Coarse aggregate, graded <sup>4</sup>	1,180	5,600	--	--	--	--
Fine aggregate (-3/8 inch) <sup>5</sup>	W	W	W	W	--	--
Coarse and fine aggregate <sup>6</sup>	W	W	W	W	155	627
Other construction materials	7	34	--	--	--	--
Agricultural <sup>7</sup>	W	W	W	W	--	--
Chemical and metallurgical <sup>8</sup>	--	--	--	--	--	--
Unspecified: <sup>9</sup>						
Reported	4,120	21,600	1,850	9,460	--	--
Estimated	1,600	8,000	430	2,100	40	200
Total	8,150	41,800	2,390	12,400	196	825
	District 5		District 6			
	Quantity	Value	Quantity	Value		
Construction:						
Coarse aggregate (+1 1/2 inch) <sup>3</sup>	--	--	--	--		
Coarse aggregate, graded <sup>4</sup>	3	19	9	34		
Fine aggregate (-3/8 inch) <sup>5</sup>	--	--	--	--		
Coarse and fine aggregate <sup>6</sup>	--	--	857	3,960		
Other construction materials	--	--	--	--		
Agricultural <sup>7</sup>	--	--	W	W		
Chemical and metallurgical <sup>8</sup>	--	--	W	W		
Unspecified: <sup>9</sup>						
Reported	536	2,910	5,750	27,400		
Estimated	400	1,900	1,400	6,900		
Total	940	4,780	9,980	47,700		

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>No crushed stone was produced in District 4.

<sup>3</sup>Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregates.

<sup>4</sup>Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregates.

<sup>5</sup>Includes screening (undesigned) and other fine aggregates.

<sup>6</sup>Includes crusher run (select material or fill), graded road base or subbase, roofing granules, unpaved road surfacing, and other coars and fine aggregates.

<sup>7</sup>Includes agricultural limestone.

<sup>8</sup>Includes cement manufacture.

<sup>9</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
KANSAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	2,090	\$5,980	\$2.86
Concrete products (blocks, bricks, pipe, decorative, etc.) <sup>2</sup>	169	601	3.56
Asphaltic concrete aggregates and other bituminous mixtures	604	1,840	3.05
Road base and coverings <sup>3</sup>	2,000	5,060	2.53
Fill	1,040	1,890	1.81
Snow and ice control	49	251	5.12
Other miscellaneous uses	115	585	5.09
Filtration	2	8	4.00
Unspecified: <sup>4</sup>			
Reported	578	1,920	3.33
Estimated	2,900	11,000	3.61
Total or average	9,560	28,700	3.00

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes plaster and gunite sands.

<sup>3</sup>Includes road and other stabilization (cement).

<sup>4</sup>Reported and estimated production without a breakdown by end use.



TABLE 6  
KANSAS: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2002, BY USE AND DISTRICT<sup>1,2</sup>

(Thousand metric tons and thousand dollars)

Use	District 1 and 2		District 3 and 4		District 5		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products <sup>3</sup>	813	2,750	252	724	1,190	3,110	2	6
Asphaltic concrete aggregates and road base materials <sup>4</sup>	389	1,390	1,130	2,340	1,040	3,060	43	120
Fill	254	629	61	176	722	1,070	4	10
Snow and ice control	22	95	7	16	16	130	4	10
Filtration	2	8	--	--	--	--	--	--
Other miscellaneous uses	2	46	92	201	22	337	--	--
Unspecified: <sup>5</sup>								
Reported	--	--	87	533	491	1,390	--	--
Estimated	1,100	3,000	950	5,000	910	2,500	--	--
Total	2,540	7,890	2,580	9,010	4,390	11,600	52	147

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Districts 1 and 2 and Districts 3 and 4 are combined to avoid disclosing company proprietary data.

<sup>3</sup>Includes plaster and gunite sands.

<sup>4</sup>Includes road and other stabilization (cement).

<sup>5</sup>Reported and estimated production without a breakdown by end use.